Remarks

Thirteen claims remain in the present application, Claims 1 and 6 as amended and new Claims 11-19 as added.

Claim objections

The erroneously numbered claims 9 and 9 were consecutively renumbered as 9 and 10 to comply with 37 CFR 1.126. Please note that claims 9 and 10 are deleted.

Claim Rejections under 35 U.S.C. 102(b)

Claims 1, 2, 7, 9 and 10 are rejected as being anticipated by US Patent No. 1,368,454 to Rebman

In US Patent No. 1,368,454, Rebman discloses a current motor having pontoons for housing generator driving means and for supporting adjustable water wheels employed to drive the electric generators.

As amended, claim 1 recites (emphasis mine):

> "...at least one rotor having blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each held by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage, **said rotor including a hollow, watertight cylinder having an outer circumferential surface dimensioned and positioned to protrude into the flowing water to provide buoyancy; and**
> power producing means rotatably connected to said rotor;
> **whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said watertight cylinder."**

There is no mention in Rebman of such rotor. Therefore, amended claim 1 is not

anticipated by Rebman. Nor would it be obvious to add such a flotation element to Rebman. As such, amended claim 1 is allowable.

Claim 2 depends on amended claim 1 that is not anticipated by the prior art reference.. Further, claim 2 adds additional features which, in combination with claim 1 render claim 2 both novel and unobvious. Therefore, claim 2 is allowable.

Claims 1, 2, 4, 7, 9 and 10 are rejected as being anticipated by Gondolf (DE 4026638).

Gondolf discloses a water-powered current generation plant that comprises two spaced apart floating pontoons in which at least one paddle wheel is positioned. The rotation of the paddle wheel is used for driving an electrical generator.

There is no mention in Gondolf of such rotor including a hollow, watertight cylinder as recited in amended claim 1. Therefore, the claim is not anticipated by Gondolf, nor is claim 1 obvious over Gondolf. As such, amended claim 1 is now allowable.

Claims 2 and 4 depend on amended claim 1 that is not anticipated by the prior art reference. As such, claims 2 and 4 are not anticipated. Further, they address an inventive step. Therefore, claims 2 and 4 are allowable.

Claim 6 was amended and rewritten in an independent form incorporating the limitations of claim 1. Claim 6 further comprises a characteristic that the rotor has a plurality of **hollow and watertight blades whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said blades.**.

General Discussion

The invention as claimed is directed toward a turbine apparatus capable of producing power when held stationary in a stream of flowing water. The apparatus disclosed in the Rebman reference uses a large number of water wheels to drive electric generators. Inconveniently, this apparatus needs a high level of maintenance to control the wheels, the

generators, the belts. It is also necessary to manually adjust the depth of the wheels which induces a non-even production of generated power. Furthermore, depending on the adopted depth of the water wheels, and the number of sections (a section comprising a pontoon and a pair of water wheels to connect to another pontoon), the tension on the anchorage system is extreme.

The Gondolf's apparatus presents similar inconveniences, for example, the depth of the paddle wheels is adjusted using movable and supporting arms that are driven by hydraulic pistons.

The present invention as in amended claim 1, provides a rotor including a hollow, watertight cylinder, which increases the general buoyancy of the turbine apparatus. The hollow and watertight blades being part of the rotor as in amended claim 6 also acts on the general buoyancy of the turbine of the present invention. A new independent claim 17 incorporates the hollow and watertight characteristics of both the rotor and the blades, which of course is in favour of having a buoyant apparatus. Advantageously, having such apparatus with watertight components provides the unforseen advantage of decreasing the overall pressure on the anchorage system.

The blades are disposed along the outer circumferential surface of the rotor, and the disposition of the shaft of the rotor is such that the blades are immersed in the water without the need of adjusting the height of the rotor. Therefore, the apparatus allows generating of power in an even way, though the amount of generated power is limited by the flow of water.

Claim Rejections under 35 U.S.C. 103(a)

Claims 5 and 6 are rejected as being unpatentable over Rebman or Gondolf in view of US Patent No. 5,664,418 to Walters.

In US Patent No. 5,664,418, Walters discloses a whirl-wind vertical axis wind and water turbine. The turbine of this prior art invention may be inverted and mounted with its

rotor entirely or partially immersed in water about a vertical axis. There is no mention in this patent of having hollow and watertight blades or an hollow and watertight cylinder as being part of the rotor that would serve to provide buoyancy. Indeed, there is no suggestion of a need to provide buoyancy in Walters '418.

Therefore, the mention of such floatation features in the claims of the present application are not obvious in view of Walters. Furthermore, a combination of the prior art references would not lead a person with skill in the art to the present invention. The claims claiming this subject matters are therefore not obvious in view of the references and any combination of the references are allowable.

Applicant therefore requests reconsideration of the present application and approval of this application to advance to Allowance.

Respectfully submitted,

Per _____

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Attachment A

Clean copy of the amended claims

Amendment of February 26, 2003

Serial No:09/909,840

Please amend Claims 1 and 6 to read as follows s:

1. (Once amended) Turbine apparatus capable of producing power when held stationary in a stream of flowing water, comprising:

a floatable body having two spaced, parallel, hollow side members joined by several spaced cross members, said side and cross members being arranged so that said side members provide a flow passage for water therebetween from an upstream end of said body to a downstream end thereof while the cross members are largely above the level of water in which said body floats;

at least one rotor having a plurality of blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each supported by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage, said rotor including a hollow, watertight cylinder having an outer circumferential surface dimensioned and positioned to protrude into the flowing water to provide buoyancy; and

power producing means rotatably connected to said rotor;

whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said watertight cylinder.

6. (Once amended) Turbine apparatus capable of producing power when held stationary in a stream of flowing water, comprising:

a floatable body having two spaced, parallel, hollow side members joined by several spaced cross members, said side and cross members being arranged so that said side

members provide a flow passage for water therebetween from an upstream end of said body to a downstream end thereof while the cross members are largely above the level of water in which said body floats;

at least one rotor having a plurality of hollow and watertight blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each held by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage; and,

power producing means rotatably connected to said rotor;

whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said blades.

Please add the following claims:

Claims 11-19

11. (New) Turbine apparatus according to claim 6, wherein said rotor includes a hollow, watertight cylinder having an outer circumferential surface dimensioned and positioned to protrude into the flowing water to provide buoyancy.

12. (New) Turbine apparatus according to claim 1, wherein each blade comprises a hollow and watertight compartment.

13. (New) Turbine apparatus according to claim 12 wherein each blade is attached to said outer circumferential surface of the hollow and watertight cylinder.

14. (New) Turbine apparatus according to claim 6 wherein each hollow and watertight blade is attached to said outer circumferential surface of the hollow and watertight cylinder.

15. (New) Turbine apparatus according to claim 1 wherein said upstream ends of said side

members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance a transfer of energy from water flowing through said channel to said blades.

16. (New) Turbine apparatus according to claim 6 wherein upstream ends of said side members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance a transfer of energy from water flowing through said channel to said blades.

17. (New) Turbine apparatus capable of producing power when held stationary in a stream of flowing water, comprising:

a floatable body having two spaced, parallel, hollow side members joined by several spaced cross members, said side and cross members being arranged so that said side members provide a flow passage for water therebetween from an upstream end of said body to a downstream end thereof while the cross members are largely above the level of water in which said body floats;

at least one rotor having a plurality of hollow and watertight blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each held by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage, said rotor including a hollow, watertight cylinder dimensioned and positioned to protrude into the flowing water to provide buoyancy; and,

power producing means rotatably connected to said rotor;

whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said rotor and said blades.

18. (New) Turbine apparatus according to claim 17 wherein each hollow and watertight blade is attached to an outer circumferential surface of the hollow and watertight cylinder.

19. (New) Turbine apparatus according to claim 17 wherein upstream ends of said side members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance the energy of water flowing through said channel.

Attachment B
Marked-up copy of the amended claims
Amendment of February 26, 2003
Serial No:09/909,840

Please amend the following claims:
Claims 1 and 6

Please delete the following claims:
Claims 3, 5, 7-10

Please add the following claims:
Claims 11-16

1. (Once amended) Turbine apparatus capable of producing power when held stationary in a stream of flowing water, comprising:

a floatable body having two spaced, parallel, hollow side members joined by several spaced cross members, said side and cross members being arranged so that said side members provide a flow passage for water therebetween from an upstream end of said body to a downstream end thereof while the cross members are largely above the level of water in which said body floats;

at least one rotor having a plurality of blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each [held] supported by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage[;], said rotor including a hollow, watertight cylinder having an outer circumferential surface dimensioned and positioned to protrude into the flowing water to provide buoyancy; and

power producing means rotatably connected to said rotor;

[and wherein upstream ends of said side members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance the energy of water flowing through said channel.]

whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation

of the apparatus is assisted by the buoyancy of said watertight cylinder.

6. (Once amended) [Turbine apparatus according to claim 5, wherein said blades of the rotor are also] Turbine apparatus capable of producing power when held stationary in a stream of flowing water, comprising:

a floatable body having two spaced, parallel, hollow side members joined by several spaced cross members, said side and cross members being arranged so that said side members provide a flow passage for water therebetween from an upstream end of said body to a downstream end thereof while the cross members are largely above the level of water in which said body floats;

at least one rotor having a plurality of hollow and watertight blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each held by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage; and,

power producing means rotatably connected to said rotor;

whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said blades.

11. (New) Turbine apparatus according to claim 6, wherein said rotor includes a hollow, watertight cylinder having an outer circumferential surface dimensioned and positioned to protrude into the flowing water to provide buoyancy.

12. (New) Turbine apparatus according to claim 1, wherein each blade comprises a hollow and watertight compartment.

13. (New) Turbine apparatus according to claim 12 wherein each blade is attached to said outer circumferential surface of the hollow and watertight cylinder.

14. (New) Turbine apparatus according to claim 6 wherein each hollow and watertight blade is attached to said outer circumferential surface of the hollow and watertight cylinder.

15. (New) Turbine apparatus according to claim 1 wherein said upstream ends of said side members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance a transfer of energy from water flowing through said channel to said blades.

16. (New) Turbine apparatus according to claim 6 wherein upstream ends of said side members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance a transfer of energy from water flowing through said channel to said blades.

17. (New) Turbine apparatus capable of producing power when held stationary in a stream of flowing water, comprising:

a floatable body having two spaced, parallel, hollow side members joined by several spaced cross members, said side and cross members being arranged so that said side members provide a flow passage for water therebetween from an upstream end of said body to a downstream end thereof while the cross members are largely above the level of water in which said body floats;

at least one rotor having a plurality of hollow and watertight blades and being rotatable on a horizontal shaft, said shaft having opposite end portions mounted in bearings each held by one of said side members so that the shaft is normally above the said water level and so that said blades extend down into the water in the flow passage and are transverse to the direction of water flow in said passage, said rotor including a hollow, watertight cylinder dimensioned and positioned to protrude into the flowing water to provide buoyancy; and,

power producing means rotatably connected to said rotor;

whereby, upon positioning said turbine apparatus in a stream of flowing water, the floatation of the apparatus is assisted by the buoyancy of said rotor and said blades.

18. (New) Turbine apparatus according to claim 17 wherein each hollow and watertight blade is attached to an outer circumferential surface of the hollow and watertight cylinder.

19. (New) Turbine apparatus according to claim 17 wherein upstream ends of said side members have deflecting surfaces configured to direct the flowing water laterally into said flow channel to enhance the energy of water flowing through said channel.